

**REMARKS**

***Preliminary Matters:***

Applicants thank the Examiner for acknowledging Applicants' claim to priority and receipt of the priority document. Further, it is noted with appreciation that the Examiner has considered the references cited in the Information Disclosure Statements filed on November 14, 2005 and April 2, 2008. Finally, the Examiner has accepted the drawings filed on November 14, 2005.

***Disposition of Claims:***

Claims 1-53 are all the claims pending in the application. Of these claims, claims 15-34, 37-40 and 50-53 are withdrawn from consideration. Claims 1-14, 35, 36 and 41-49 are rejected.

***Specification:***

The Examiner has objected to the Abstract of the Disclosure. Applicants have amended the Abstract to overcome the Examiner's objections.

***Claim Objections:***

The Examiner has objected to claims 5, 6, 7, 9, 10, 11, 12, 13 and 14 in that claims 41, 42, 43, 44, 45, 46, 47, 48 and 49, are substantially duplicates thereof. Applicants have cancelled 41-49 to overcome this objection.

***Claim Rejections Under 35 U.S.C. § 101:***

Claims 1-14 and 41-49 are rejected under 35 U.S.C. § 101 as not falling within one of the four statutory categories of invention.

As an initial matter, claim 1 has been amended to comply with U.S. format by reciting specific method steps. In addition, Applicant respectfully disagrees with the Examiner's

assertion that claim 1 and its dependent claims do not fall within one of the four statutory categories of invention. Claim 1 (and its dependent claims) clearly relate to a “process” which is a category of statutory subject matter as it relates to a “method of detecting particles”. Claim 1 specifically recites the following method steps:

***emitting a beam of radiation into a monitored region;***

***capturing images of the monitored region, having one or more image segments, with an image capture device; and***

***in a data processor, detecting a variation in scattered radiation in images of the monitored region indicating the presence of the particles.***

Thus, the claims require the “capturing images of the region ... with an image capture device” and that a “data processor” performs the detection step. Accordingly, the applicant submits that the method is now tied to the devices that perform it. Hence, it is requested that this rejection be withdrawn.

***Claim Rejections Under 35 U.S.C. § 102 and 103:***

Claims 1-5, 9, 35, 36, 41 and 44 are rejected under 35 U.S.C. § 102(b) as being anticipated by Garbundy (U.S. Patent No. 3,788,742). Further, claims 1-3, 5, 6, 9, 35, 36, 41 and 44 are rejected under 35 U.S.C. § 102(b) as being anticipated by Opitz (U.S. Patent Publication No. 20020135490). Claims 6-8, 13, 14, 42, 43, 48 and 49 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Opitz as applied to claims 1 and 5 above, and further in view of Garbundy. Further, claims 10 and 45 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Garbundy as applied to claim 9 above, and further in view of Miller (U.S. Patent No. 3,688,298). Finally, claims 11, 12, 46 and 47 are rejected under 35 U.S.C. § 103(a) as

being unpatentable over Garbundy as applied to claim 1 above, and further in view of Sakagami (Japanese Patent No. 362153780). These rejections are traversed for the following reasons.

### **Garbundy**

With respect to the rejection of claim 1 as being anticipated by Garbundy, Applicant submits that Garbundy does not capture images of the region at all, and more particularly does not do so in a manner that provides image segments. Instead Garbundy receives light at a light receiver and measures its intensity. Garbundy specifically teaches that the method described therein removes the need for gathering spatial information about the received light - at column 10 line 45 to 48 Garbundy states “the image of the scattering volume as observed by the sensor (receiver) **does not have to be resolved**”.

Accordingly it is submitted that claim 1 is patentable over Garbundy. The same argument applies to claims 35 and 36 *mutatis mutandis*.

Following the discussion above in relation to claim 1 it is submitted that claim 3 is also further patentable over Garbundy as it fails to teach the use of image segments, and therefore this cannot be used to allow the location of the particles in the region to be identified, as claimed.

Claim 4 is further patentable over Garbundy. Without spatial information in the received light (as described above), Garbundy is unable to determine a “geometric relationship” between the “between the locations of a source of emitted radiation, a direction of the emitted radiation and a point of image detection “ from its images, in the manner claimed.

Claims 2, 5, 9 is patentable over Garbundy at least through its dependence on claim 1.

**Opitz**

Turning to the rejection of claim 1-3, 5, 6, 9, 35 and 36, 41 and 44 as being anticipated by Opitz, Applicant disagrees with this rejection as well.

Opitz is a traditional video smoke detector that takes a picture of a scene and compares that to a stored image. In contrast the present invention is configured to detect variations in scattered radiation that indicate the presence of particles in the monitored region.

In the case of Opitz, the device provides a light for illuminating the scene so that the pictures can be taken. The light received by the camera in Opitz is light that is reflected from objects in the scene or (as identified at paragraph [0026]) the emission of a fire. If this light changes in a manner that meets the alarm requirements described in Opitz, the system will raise an alarm. There is no teaching or disclosure in Opitz that the radiation received by Opitz is scattered radiation.

Accordingly it is submitted that claim 1 is patentable over Opitz.

In relation to claim 3, Opitz does not teach that one can identify the location of the particles. Opitz does form an image comprised of pixels and then uses data from a subset of the image, but Opitz does not teach that this can be used to identify the location of the particles.

In relation to claim 5, Opitz does not teach anything about measuring an increase in scattered light in the region, it simply looks for a variation in pixel values and counts the number of pixels that vary. Any variation detected in Opitz might be a decrease in received scattered light or the introduction of a new light source – e.g. light from a fire.

It is submitted that remaining claims are patentable over Opitz at least because they are dependent on an allowable base claim.

**The combination of Opitz and Garbundy**

The Examiner further asserts claims 6 to 8, 13, 14 42, 43, 48 and 49 are obvious in view of Opitz. The applicant rejects this assertion. Indeed, the applicant rejects the Examiner's assertions that Opitz and Garbundy would be combined by one of ordinary skill in the art.

The Examiner submits that Opitz suggest a system for emitting radiation directed to an area potentially encompassing a smoke stack or plume. This is not correct – Opitz is concerned with detecting smoke and or fire in “rooms”, more specifically in a cargo area and most particularly the cargo area of a plane. This is not “an area potentially encompassing a smoke stack or plume” as alleged by the examiner. Thus the combination would not have been obvious as suggested by the Examiner.

Moreover, Garbundy specifically teaches at column 10 line 45 to 48 Garbundy that “the image of the scattering volume as observed by the sensor (receiver) does not have to be resolved”. This statement explicitly teaches away from the combination of Garbundy and Opitz as Opitz primary method of detecting variation in images revolves around resolving an image of a scene and then counting the number of pixels that have changes in intensity over time. Accordingly the Applicant submits that any objection raised on the combination of these documents is improper and should be withdrawn.

***Conclusion:***

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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